

Ecology Proposals after Considering Technical Committee Members Comments

November 12, 2009

PROPOSED LID DEFINITION:

Low-impact development is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design. LID strategies can be applied to new development, redevelopment, urban retrofits, and infrastructure improvements. LID strategies can have a site, subdivision, or basin scale focus.

LID GOALS

To prevent changes in the natural hydrology of streams, lakes, wetlands, and other natural aquatic systems from land development; and to reduce the hydrologic changes on aquatic systems caused by existing development.

LID TECHNIQUES AND DEVELOPMENT PRINCIPLES

Additional LID Techniques and development principles were recommended by the TAC. They have been added to the "LID Techniques and Development Principles" document, which will continue to evolve throughout the Advisory Committee process.

SIGNIFICANT ISSUES RAISED BY TECHNICAL COMMITTEE DISCUSSION:

1. Should practices that have a strictly water quality benefit, not a hydrologic benefit, be included as LID practices?

Ecology initial response: No. The core focus and benefit of low impact development is to reduce hydrologic change. The characteristic of reducing surface runoff by various methods throughout a site, subdivision, or basin distinguishes LID from standard development. Reducing surface runoff can reduce the quantity of pollutants leaving the development site. Additionally, some LID techniques and principles have the added benefit of storing or degrading pollutants on-site. That benefit can help meet pollutant source control and treatment requirements. However, defining treatment practices that do not have a hydrologic benefit as LID will blur the distinction between standard development and LID.

2. Should the municipal stormwater NPDES permit require local governments to implement LID in geographic areas that drain to waters not significantly impacted by hydrologic changes caused by development?

Possible examples: Direct discharges to marine waters and to fresh waters listed as “Flow Control Exempt” (Appendix 1-E of the Stormwater Management Manual for Western Washington)

Ecology’s initial response: The LID requirement imposed by the municipal stormwater NPDES permits should not apply to direct discharges to marine waters, or to discharges through an MS4 to marine waters. We have not identified a need to reduce the quantity of stormwater flowing into marine systems from nearby land. We have a pollutant reduction need, but that need may be met through treatment practices that may or may not be LID-related.

LID practices should be required for lands that drain to streams, wetlands, or lakes. Development-induced hydrologic changes have negatively impacted those surface waters.

LID practices should be required for discharges to “flow control exempt rivers and lakes.” Ecology established the list of “flow control exempt” waters based on application of an observed relationship between the extent of land cover change and the likelihood of high flow rate impacts to river/stream channels. Generally, if the maximum projected land cover change stayed below a certain level, high flow impacts were improbable. Ecology is not aware of a similar relationship between the extent of land development and the likelihood of significant changes in year-round flow rates that could have impacts to beneficial uses. Therefore, Ecology does not have a basis to exempt land areas that drain to large surface waters.

Preliminary List of Site and Subdivision Scale LID Techniques and Development Principles

UPDATED 11/16/09 BASED ON INPUT FROM TAC MTG #1

LID Techniques from Chapters 6 & 7 of the *Low Impact Development Technical Guidance Manual for Puget Sound*

- Permeable Pavements

 - Sidewalks and Patios

 - Driveways

 - Roads

- Bioretention/Rain Gardens

 - Site/Shared sites

 - Public Right of Way

- Small scale, distributed infiltration systems such as trenches and dry wells serving individual lots

- Native vegetation and soil structure preservation, including tree conservation

- Tree planting

- Site planning and layout that takes advantage of natural features

- Soil Quality and Depth

- Dispersion

 - Partial dispersion

 - Full dispersion (no surface runoff)

- Reverse slope sidewalks

- Minimal Excavation Foundations

- Vegetated Roofs

 - Extensive

 - Intensive

- Rainwater Harvesting

Development Principles adapted from *Better Site Design: A Handbook for Changing Development Rules in Your Community*, Center for Watershed Protection

- Residential Streets and Parking Lots

 - Reduced Street Width

- Reduced Street Length
- Reduced Right-of-Way Width
- Less Cul-de-Sac use; reduced radius
- Vegetated Open Channels for conveyance
- Maximum Parking Ratio Limits
- Lower Parking Code Requirements

Parking Lots – reduced stall size, efficient lanes

- Parking Structures and Shared Parking

- Parking Lot Runoff treatment in bioretention, strips, and islands

Lot Development

- Open Space Design with clustered small lots

- Smaller Setbacks and Narrower Frontages

- Sidewalk placement and widths

- Shared Driveways & Alternative surfaces

- Open Space Management

- Alternative building designs to reduce footprint and disturbed areas, such as multiple stories and common wall construction

- Isolate impervious areas to render them “ineffective”

- Integrate landscaping requirements with bioretention facilities

Conservation of Natural Areas

- Create buffers along all perennial streams to include 100-yr floodplain, steep slopes, wetlands

- Stream buffers preserved or restored with native vegetation

- Restrict clearing and grading to building footprint, access routes, and fire protection needs

- Conserve trees & other vegetation by planting additional vegetation, clustering tree areas, promoting native vegetation

- Employ incentives such as density compensation, tax reduction, by-right open space development

- No unmanaged stormwater to wetlands, sole-source aquifers, or sensitive areas

Preliminary List of Basin-Scale LID Techniques and Development Principles

Preliminary list items adapted from Better Site Design: A Handbook for Changing Development Rules in Your Community, and “Effects of Urbanization on Small Streams in the Puget Sound Lowland Ecoregion,” May et al, 1997

Limits on total clearing and grading in a basin. Preservation of a high percentage of the basin in native vegetation.

Limits on total effective impervious area

Buffer widths on all streams not just streams regulated by the Shoreline Management Act

Quality stream buffers with mature, native coniferous forest and few road crossings

No development in 100-year floodplain

Protect and enhance headwater wetlands and off-channel riparian wetlands

Replanting of trees and native vegetation

Preference or mandatory use of infiltration systems for concentrated stormwater management

Preferentially locate development on soils with higher infiltration rates

Application of most of Site & Subdivision scale techniques and principles to maximize infiltration and help meet basin targets for native vegetation retention and effective impervious surfaces

Infill and redevelopment encouraged to reduce creation of new impervious surfaces

Basin-scale hydrologic modeling to predict hydrologic changes under various possible development and land management strategies

Density of road network and layout controls to minimize stream crossings